SUPREME COURT OF THE UNITED STATES.

No. 3.—October Term, 1931.

The Permutit Company, Petitioner, *vs.* Graver Corporation.	Certiorari to the United States Circuit Court of Appeals for the Seventh Circuit.

[November 23, 1931.]

Mr. Justice Brandeis delivered the opinion of the Court.

The Permutit Company is the owner of Gans Patent No. 1,195,923, for an apparatus for softening water, applied for August 5, 1911 and granted August 22, 1916. It brought, on February 23, 1928, this suit in the federal court for northern Illinois, against Graver Corporation to enjoin infringement of Claims 1 and 5. The defendant denied both the validity of the patent and the infringement. The District Court held both claims invalid, 37 F. (2d) 385. The Circuit Court of Appeals for the Seventh Circuit affirmed that decision; and also held that the defendant's "presently used structures" do not infringe Claim 5, 43 F. (2d) 898. Certiorari was granted because of conflict with earlier decisions in other circuits.[1]

Water is hard because it contains the salts of calcium and magnesium. It may be softened by distillation or by adding to the water certain other chemicals through which the hardening constituents in solution are changed to an insoluble form and precipitated. Such softening may also be effected by the use of zeolite, a hydrated alumino-silicate found in nature. When hard

[1]The patent was first sustained by the District Court for western New York. Permutit Co. *v.* Harvey Laundry Co., 274 Fed. 937; affirmed by the Second Circuit Court of Appeals, 279 Fed. 713; certiorari denied, 259 U. S. 588. It was then sustained by the District Court for southern New York. Permutit Co. *v.* Paige & Jones Chemical Co., 292 Fed. 239; affirmed, 22 F. (2d) 916. It was also sustained by the Sixth Circuit Court of Appeals, Permutit Co. *v.* Wadham, 13 F. (2d) 454, 15 F. (2d) 20; reversing the decision in 294 Fed. 370, which had held the patent invalid.

water is passed through zeolites they give up their sodium to the water and take from it the calcium and magnesium as a new base. Zeolites have the peculiar quality that, after becoming exhausted in such use, they may be regenerated by passing a solution of common salt through them, whereupon they give up their new base of calcium and magnesium and take back their sodium base. They retain indefinitely these valuable properties.

The chemical attributes of zeolites, and their effect upon hard water, had been known long before the application for the patent in suit. But zeolites were not employed commercially as a water-softener because, as then found in nature, they were ill adapted for use in filters and the expense of mining them was large. Gans invented a process for producing artificial zeolites and a process of softening water by means of them. The United States patents issued for those inventions had expired before the commencement of this suit, which is upon a patent for an apparatus "in which the zeolites or alumino-silicates can be used in a filter and be regenerated therein so as to be capable of continuous use for the softening of water." The essential elements of the water softening process in which this apparatus is employed are the passage of water through zeolites, their regeneration by recharging them with the sodium chloride solution and the rinsing of them thereafter, so that no noticeable tinge of salt will be found in the filtered water. A drawing was attached to the specification as an example of a filter provided according to the invention claimed.

As described in the specification, the apparatus consists of a cylindrical container within which are "a number of horizontally disposed perforated plates." Near the bottom is one upon which rests a layer of sand (or quartz). This supports a bed of zeolites. At some distance above the zeolites is another perforated bed of sand "through which the water to be softened may be first filtered." There are piping connections so that the hard water may be run into the casing through the zeolite bed and out to the soft-water service line. The chamber is also provided with means for cutting off the hard water and introducing a flow of salt water to regenerate the zeolites; and with means for washing out of the container the contaminated brine and any accumulated dirt. As so constructed, the filter may operate by letting the hard water flow either downward through the upper sand bed to the zeolites

or upward to them through the lower sand bed. On March 2, 1920, The Permutit Company disclaimed from the scope of Claim 1 any apparatus "in which the water to be softened is so introduced into the casing that it passes upwardly through said layer of zeolites." It is conceded that Graver Corporation's 1927 type of water softener does not infringe Claim 1 as in it the water passes upward. The specification also describes, and the drawing indicates, a modified form of apparatus provided with means for stirring the zeolites in washing. No stirrer is employed in the defendants' apparatus.

First. The apparatus described in the specification closely resembles sand filters long used. The elements enumerated above, alone and in combination, are confessedly old. The only invention seriously urged under Claim 1 is the substitution of a "free" for a "locked" zeolite bed—a matter which is not referred to either in the specification or in the claim. In earlier filters the zeolites had been held in place by locking the bed; that is by placing a metal screen either immediately over the layer of zeolites or over a layer of burlap or excelsior resting upon them. The occasion for a screen is that zeolite grains are lighter than the sand and gravel on which they rest. In flowing the water or the regenerating solution upward through the zeolite bed in an upflow softener, or in backwashing the zeolites in a downflow softener for the purpose of cleansing them of accumulated slime and dirt, the lighter grains may be washed out through the flow pipe unless impeded in some way. Gans is alleged to have discovered that a locked zeolite bed is erratic in action and will soon cease to give soft water; that through such a bed the hard water will flow unevenly; that preferred channels of flow will form; that the zeolites contiguous to them will be speedily exhausted and the hard water will pass through unaffected, although the great mass of zeolite material remains unexhausted; and that it is necessary to have an open space above the top of the zeolites in order to furnish opportunity for the zeolites to rise or boil, and to spread out and reform in the bed. The invention relied upon consists in removing the close-fitting cover from the zeolite bed and in providing adequate rising space by placing the screen at some distance above the top of the layer of zeolites.

We have no occasion to consider whether this alleged Gans invention of a "free" zeolite bed rises to the dignity of invention or

whether, as Graver Corporation contends,[2] it lacked novelty, and was anticipated by earlier apparatus and publications—defenses to which the evidence, the briefs and the oral arguments were mainly directed. For even if a patent for a "free" bed might have been valid, that sued on is invalid for lack of the disclosure prescribed by R. S. § 4888.[3] There is no mention in the specification of either a "free" or a "locked" zeolite bed; or of the alleged discovery that a rising space above the zeolite bed is necessary for the successful operation of the softener; or of the need of a device to prevent the lighter grains of zeolite from passing out in back washing. Nor does Claim 1 or Claim 5 make mention of a "free" zeolite bed. Claim 1 is for "a filter bed consisting of a layer of sand or quartz and a layer of zeolites or hydrated alumino-silicates disposed on the layer of sand or quartz."[4] Claim 5 for "a filter bed consisting of a layer of zeolites or alumino-silicates, supporting means for said layer."[5] As the patentee has thus failed to give in the specification "a written description" and has likewise failed particularly to point out and distinctly claim the free zeolite bed, as "the part, improvement, or combina-

[2]It was contended by defendant that the "free bed" had been fully described in prior printed publications more than two years before the time Gans filed his application for the patent sued on. Moreover, in this case (unlike the earlier ones), the defendant introduced much evidence of successful operation of "locked" beds.

[3]Sewall *v.* Jones, 91 U. S. 171, 184, 185; Yale Lock Mfg. Co. v. Greenleaf, 117 U. S. 554, 559; Steward *v.* American Lava Co., 215 U. S. 161, 165-167; Beidler *v.* United States, 253 U. S. 447, 452, 453; Fulton Co. *v.* Power Regulator Co., 263 Fed. 578, 580; Typewriter Hilliardized, Inc. *v.* Corona Typewriter Co., 43 F. (2d) 961, 964.

[4]"Claim 1. A water softening apparatus comprising a casing, a filter bed consisting of a layer of sand or quartz and a layer of zeolites or hydrated alumino-silicates disposed on the layer of sand or quartz, means for permitting the passage of water through the casing, means for cutting off the supply of water on the exhaustion of the zeolites, and means for passing through the casing a solution of salt capable of regenerating the zeolites."

[5]"Claim 5. Water softening apparatus comprising a casing, a filter bed consisting of a layer of zeolites or alumino-silicates, supporting means for said layer, means for permitting the passage of water through the casing, means for cutting off the supply of water on the exhaustion of the zeolites, means for supplying and passing into the casing a solution of a salt capable of regenerating zeolites and means connected to the lowest point of the casing for removing the salt solution so introduced."

tion which he claims as his invention or discovery", the patent is void.

The question of compliance with the requirement of disclosure laid down by § 4888 was not adverted to in either opinion of the Second Circuit Court of Appeals sustaining the validity of the patent, 279 Fed. 713, 22 F. (2d) 916[6]; nor was it called to the attention of this Court which denied certiorari in the first case in 259 U. S. 588. In those cases both of the district courts seem to have thought that the free surface of the zeolites was indicated by the attached drawing and to have deemed such indication sufficient, although the matter was nowhere mentioned in the description or claims, 274 Fed. 937, 942; 292 Fed. 239, 240. The opinion in the second case added that this feature was necessarily "presupposed" in the stirring device mentioned in the description as "advantageous" and included in other claims not now in suit, and that it was "involved" in the absence from Claims 1 and 5 of any upper sand filter. These conclusions were adopted by the Circuit Court of Appeals for the Sixth Circuit,[7] which invoked the doctrine that "if the specification and drawings of a patent show a structure clearly involving a certain theory of operation, it is not necessary that the patentee should expressly describe this theory, nor indeed that he should at that time clearly understand it."

We think that these views rest upon misconception. The absence in the claims of a sand bed placed above the zeolites does not imply that the zeolite bed is to be unconfined. The only normal inference from such silence is either that it was deemed immaterial whether the zeolite bed be locked or free, or that if a free bed is

[6] In 22 F. (2d) 916, 918, the Court in rejecting a defense of anticipation by a German Gebrauchmuster stated that the earlier patentee did not have in mind back washing to which Gans referred in his specification. This was not said, however, in reference to the question of the adequacy of Gans' disclosure.

[7] The Court said: "The specification and drawing provide for the occasional descent into the zeolite bed from above of a revolving stirrer, and this makes it clear that the top of the zeolite must be free and unconfined, under the contemplation of these claims, like 1 and 5, which do not imply the nonuse of the stirrer." 13 F. (2d) 454, 458. On the contrary, the drawing shows that a vertical movement of the stirrer was not contemplated and that the arrangement of shaft and gear would prevent it. Moreover, the stirrer was not an element in the combination claimed. It was not even an element in

preferable, it was not claimed because it lacked novelty. The drawing annexed to the specification, it is true, shows a layer of sand or quartz at a point above the zeolites and an unoccupied space between it and the top of the zeolite bed. But there is no suggestion on the drawing or elsewhere that the upper plate bearing the layer of sand or quartz has any purpose except to serve as a mechanical filter through which "the water to be softened may be first filtered", or that the unoccupied space has any other purpose than that of similar spaces in sand filters long familiar.[8] Moreover, while drawings may be referred to for illustration and may be used as an aid in interpreting the specification or claim, they are of no avail where there is an entire absence of description of the alleged invention or a failure to claim it.[9] The statute requires the patentee not only to explain the principle of his apparatus and to describe it in such terms that any person skilled in the art to which it appertains may construct and use it after the expiration of the patent, but also to inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not.[10] The free bed was neither described in the specification nor claimed in either Claim 1 or Claim 5.[11]

Second. The further contention is that Claim 5 can be sustained on the ground that in providing for "means connected to the lowest point of the casing for removing the salt solution"

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the filter shown in the drawing and referred to in the specification "by way of example". The specification states: "Fig. 2 is a similar, but fragmental view of a modification carrying a stirring device; Fig. 3 is a horizontal section of the same." Nor would the presence of the stirrer in any event be inconsistent with a confined bed. See 37 F. (2d) 385, 392.

[8]Such unoccupied space is exhibited in the drawings annexed to Jewel Patent No. 478,261; Bommarius No. 519,565; Driesbach No. 630,870; Bommarius No. 632,091; and Bachman No. 678,532, all relating to ordinary filters, and all introduced in evidence below.

[9]McCarty *v.* Lehigh Valley R. R. Co., 160 U. S. 110, 116; Tinker *v.* Wilber Eureka Mower & Reaper Mfg. Co., 1 Fed. 138, 139; Gunn *v.* Savage, 30 Fed. 366, 369; Windle *v.* Parks & Woolson Machine Co., 134 Fed. 381, 384-5.

[10]Merrill *v.* Yeomans, 94 U. S. 568, 573; Seymour *v.* Osborne, 11 Wall. 516, 541.

[11]Compare Keystone Bridge Co. *v.* Phoenix Iron Co., 95 U. S. 274, 278; Alexander Milburn Co. *v.* Davis-Bournonville Co., 270 U. S. 390, 401.

it introduced a novel element constituting invention. The only novelty suggested is that of placing the means at the lowest point of the casing. It does not require the exercise of the inventive faculty to place at the bottom of a receptacle the outlet through which it is to be drained, *Smith, Adm'x* v. *Springdale Amusement Park Limited*, 283 U. S. 121, 123; *Carbice Corporation* v. *American Patents Development Co.*, 283 U. S. 420, 421; *Concrete Appliances Co.* v. *Gomery*, 269 U. S. 177, 185.

Affirmed.

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Test:

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